Application of machine vision in manufacturing of bearings using ANN and SVM

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Abstract

Bearings have a vital role in machines that determine main factors of operation. Making adequate bearings satisfying all needs which emerge both in manufacturing and operation is very important. Previously, bearings were being examined by humans, however human inspection is instable and time consuming. In this presentation, we are investigating a machine vision system that could make more accurate measurements regarding geometry, shape, color, surface defects, deformations, rusts, scratches etc. Recent investigation is connected to a real manufacturing of bearings in FAG. The main profile of the company is to produce roller bearings. If higher resolution is required the magnification of the surface with optical microscopes and scanning electron microscope (SEM) is inevitable. With these methods deeper cracks and failures can be detected. Further analysis is possible by using artificial neural networks (ANN) and support vector machines (SVM). Principles regarding machine learning are presented in this talk as well.

Keywords: machine vision, bearings, manufacturing, ANN, SVM

References

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